What is claimed is:

1. A turbomachinery blade, comprising:

a root insert,

an airfoil having a first end and a second end, the second end forming a loop enclosing the root insert, the loop having two arms in apposition to form a neck distal to the second end from the root insert, and

a jacket disposed around the neck to prevent separation of the opposing arms.

2. The blade assembly of claim 1, wherein the blade is made of a fiber reinforced composite material.

3. The blade assembly of claim 2, wherein the root insert has a cross section that is teardrop shaped.

4. The blade assembly of claim 2, wherein the root insert has a cross section that is round.

5. The blade assembly of claim 1, wherein the jacket applies compressive loads to the neck.

6. A gas turbine engine blade assembly, comprising:

a composite blade having an airfoil portion, a neck portion and a root portion, the root portion having a single root insert enveloped by two distinct arms integral to and extending from the neck portion and forming one continuous loop around the core, and

a jacket disposed around the root portion and the neck portion.

7. The blade assembly of claim 6, wherein the loop includes a distal half that is distal to the airfoil portion and a proximal half proximal to the airfoil, and wherein the jacket is substantially U-shaped and includes a central portion in apposition with the distal half of the loop, the central portion having a first thickness, and wherein the jacket includes two end portions disposed against opposite sides of the neck portion, the end portions having a thickness substantially greater than the first thickness.

8. The blade assembly of claim 7, wherein each the two end portions of the jacket have a thickness which gradually increases from the first thickness as the two end portions extend over the proximal half of the loop towards the airfoil portion.

9. The blade assembly of claim 6, further comprising:

a rotary disk defining a blade-receiving cavity, the disk having an outer surface, the cavity being bounded by the outer surface, wherein the neck portion, the root portion and the jacket are disposed inside the cavity.

10. The blade assembly of claim 9, wherein the disk circumscribes the jacket such that when tensile loading is applied to the blade along a longitudinal axis extending from the root portion to the airfoil portion, the jacket applies compressive loads to the neck portion normal to the longitudinal axis.

11. The blade assembly of claim 10, wherein the jacket applies compressive loads to the neck portion at a point inside the cavity beneath the outer surface of the disk.

12. The blade assembly of claim 9, wherein the disk circumscribes the jacket such that when tensile loading is applied to the blade along a longitudinal axis extending from the root portion, the jacket hinders the expansion of the neck portion normal to the longitudinal axis.

13. The blade assembly of claim 9, wherein the disk circumscribes the jacket such that when tensile loading is applied to the blade along a longitudinal axis extending from the root portion, the jacket hinders delamination of the neck portion.

14. The blade assembly of claim 6, wherein the blade is made of a fiber reinforced laminar material.

15. The blade assembly of claim 6, wherein the root insert has a cross-section that is teardrop shaped.

16. The blade assembly of claim 6, wherein the root insert has a cross-section that is round.

17. A turbomachinery blade assembly, comprising:

a composite blade having a proximal airfoil portion and a distal neck portion, the blade comprising a plurality of fibers, the plurality of fibers forming a continuous loop integral to the blade distal to the neck portion,

a core insert having a distal surface contour and a proximal surface contour, the core insert being circumscribed by the loop, and

a jacket having an outer surface and an inner surface enclosing the neck portion and the loop, the inner surface having a surface contour substantially aligned with the proximal surface contour of the core insert.

18. The blade assembly of claim 17, wherein the plurality of fibers are substantially aligned along a longitudinal axis defined by a lengthwise span of the airfoil portion and neck portion, and further comprising:

a rotary disk having an exterior surface normal to the longitudinal axis, the disk further defining a cavity and having a cavity surface, the cavity being bounded by the exterior surface and the cavity surface,

wherein the neck portion, the loop, the core insert and the jacket are disposed inside the cavity distal to the exterior surface.

19. The blade assembly of claim 18, wherein the loop, the neck portion and the cavity surface define a space therebetween, and wherein the jacket fills the space.

20. The blade assembly of claim 18, wherein the plurality of fibers in the neck portion are substantially parallel and separate at a separation point to form the loop, the separation point being inside of the cavity and substantially distal to the exterior surface of the disk.

21. The blade assembly of claim 20, wherein the core insert has a cross-section that is round, oval or elliptical.

22. The blade assembly of claim 20, wherein the core insert has a cross-section that is teardrop shaped, having a rounded distal surface contour, and a pointed proximal surface contour.

23. A gas turbine engine blade assembly, comprising:

a root insert member

a blade member having a proximal airfoil portion, an intermediate neck portion, and a distal root portion, the distal root portion forming a continuous loop around the root insert member,

a rotor member defining a cavity for receiving the blade member,

a jacket means for coupling the blade member to the rotor member, the jacket means being disposed inside the cavity around the intermediate neck portion and distal root portion of the blade member.

24. The gas turbine engine blade assembly of claim 23, wherein the blade member is made of a composite material.